COST OF WAR: MOTHERS' LABOR SUPPLY AND EDUCATION OUTCOMES FOR CHILDREN

By

LALOVA, Anna ivaylova

THESIS

Submitted to

KDI School of Public Policy and Management

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For the Degree of

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Committee in charge:

Professor Shun WANG, Supervisor _____

Professor Byoung-Joo KIM _____

Professor Hee-Seung YANG _____

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ABSTRACT

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In the recent work, I use the external variation of the WWII in order to exploit the effects of increase in female labor supply on the education outcomes for children. The mobilization process in the early 1940s in the U.S. pushed in some cases, incentivized in others, females to enter the labor market or to increase the weeks worked annually. For investigating that process I use data for the mobilization rates per state. This unique shift in the female labor outcomes gives opportunity to investigate the education attainment of children of mothers who were affected by the mobilization process. The main results show that there is a significant positive correlation between mobilization rates and females annual weeks worked, and negative correlation between females weeks worked and the education attainment of their children. The empirical results are utilized by statistical and/or economic significance.

ABSTRACT (Korean)

COST OF WAR: MOTHERS' LABOR SUPPLY AND EDUCATION OUTCOMES FOR CHILDREN

By

Anna Ivaylova Lalova

본 연구에서 필자는 여성 노동력 공급의증가가 그 자녀들의 교육적 성취도에 미치는 영향을 탐구하기 위해 세계 2 차 대전이라는 외부 변수(external variation)을 이용하였다. 미국의동원(mobilization)은 여성 노동력 공급 증가를 강제하거나 인센티브를 제공함으로써, 여성들로 하여금 노동시장에 진입하거나 연간 노동 주수를 늘리도록 했다. 그 과정을 탐구하기 위해서 필자는주 별 동원률(mobilization rates per state)을 사용했다. 이독특한 20 세기의동원 과정(mobilization process)은이것의 영향을 받은 어머니를 둔 자녀들의 교육적 성취도를 탐구할 계기를 마련해 주었다. 본 연구의 주요한 결과는 동원률(mobilization rate)과 여성인력의 연간 노동 주수 간에 상당히 긍정적인 상관관계가 (positive correlation) 존재한다는 것과, 여성의 연간 노동 주수와 그녀들의자녀들의 교육적 성취간에 부정적 상관관계 (negative correlation) 존재한다는 것이다. 경험적 결과들은 통계적 경제적 중요성에 따라 활용된다.

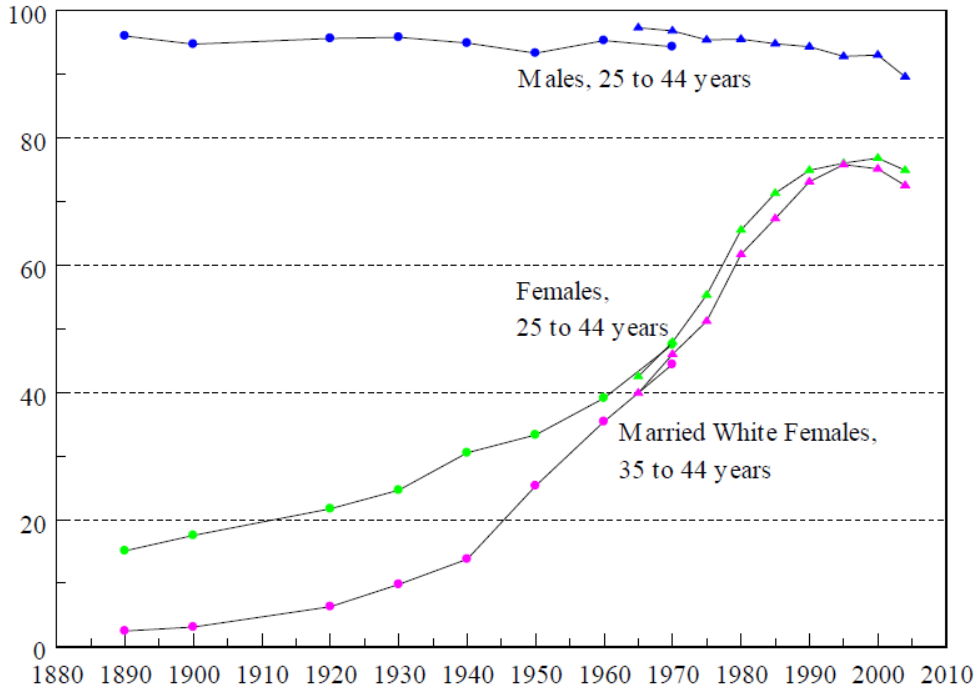
ACKNOWLEDGMENTS

I would like to express my deepest gratitude to professor Shun Wang for his unlimited and precious support, and patience. This work would not be possible without his advices and effort. Also, I am immensely grateful to my family, Qaisar Khan, Youssef Boumaiz, and Yunji Suh, without whom I would not be able to go through all difficulties.

TABLE OF CONTENTS

I. Introduction

In the beginning of the 20th century, the female labor force participation (FLFP) is less than 20 percent, while the labor force participation of men is more than 80 percent. In the 1930s in the U.S., the Great depression caused the implementation of the so called "Marriage bars", which deterred public and private institutions to hire married women as a "fair" employment manner (Goldin, 1991). However, the trend of the FLFP sharply changes in the middle of the century coinciding with the beginning of WWII, especially for married white females, aged 35 to 44 years old (Graph. 1). In fact, we can observe in the period between 1940 and 1950 the sharpest change in the values for that group of females. The female labor force increased by more than 7 million, almost doubling its value, while the male participation decreased by around 8 million (Goldin, 2013). Until the end of the century the FLFP values reach almost 80 percent threshold.



Graph.1. - Labor Force Participation Rates for Females and Males by Age and Marital Status; *Source:* Goldin (1991) from U.S. federal population census.

There are two groups of factors that can explain the values of FLFP and labor participation in general: demand and supply. On one hand, the change observed in the graph may occur due to a change in the utility functions of women, their preferences and choices (supply side). On the other hand, the reason may also be the increase of the demand for their work due to the lack of males (Acemoglu, et al., 2004). With the outbreak of WWII, more than 14 million men in the U.S. were inducted into the military for the protection of the state. That variable will be used in order to measure the "treatment effect" of the war on the labor outcomes. As shown in the data for mobilization rates (state level proportion of males between 18 and 44 years old who were inducted) more than 70 percent of the white males in the particular age group were mobilized in some states. Thus, that environment drew basics for shocking changes in the demand for females on the labor market.

In order to partially challenge the significance of the war effect on the labor market demand, I have tested the impact of the mobilization rates on weeks worked annually per female in states with mobilization rates below the level of 0.65. The results showed positive and significant correlation. However the magnitude of that correlation is smaller. In order to extract the most significant impact on the female labor outcomes, later on I will focus on states with mobilization rates greater than .65.

On the figures below (Fig.1 and Fig.2), there are shown fitted lines for the correlation of mobilization rates and female weeks worked annually and labor force participation. The OLS tests show that the correlations are positive and significant, with Adjusted R-squares varying from 0.02 to 0.30. The results shown represent women in general, without specifying marital status and number of children. The estimates are robust after controlling for farm status, state of birth, state of residence, level of education, race, marital status, and age. The aim of visualizing

all groups of women in the beginning tests is to show that the data supports the main general assumption about the treatment effects of the mobilization rates in the U.S.

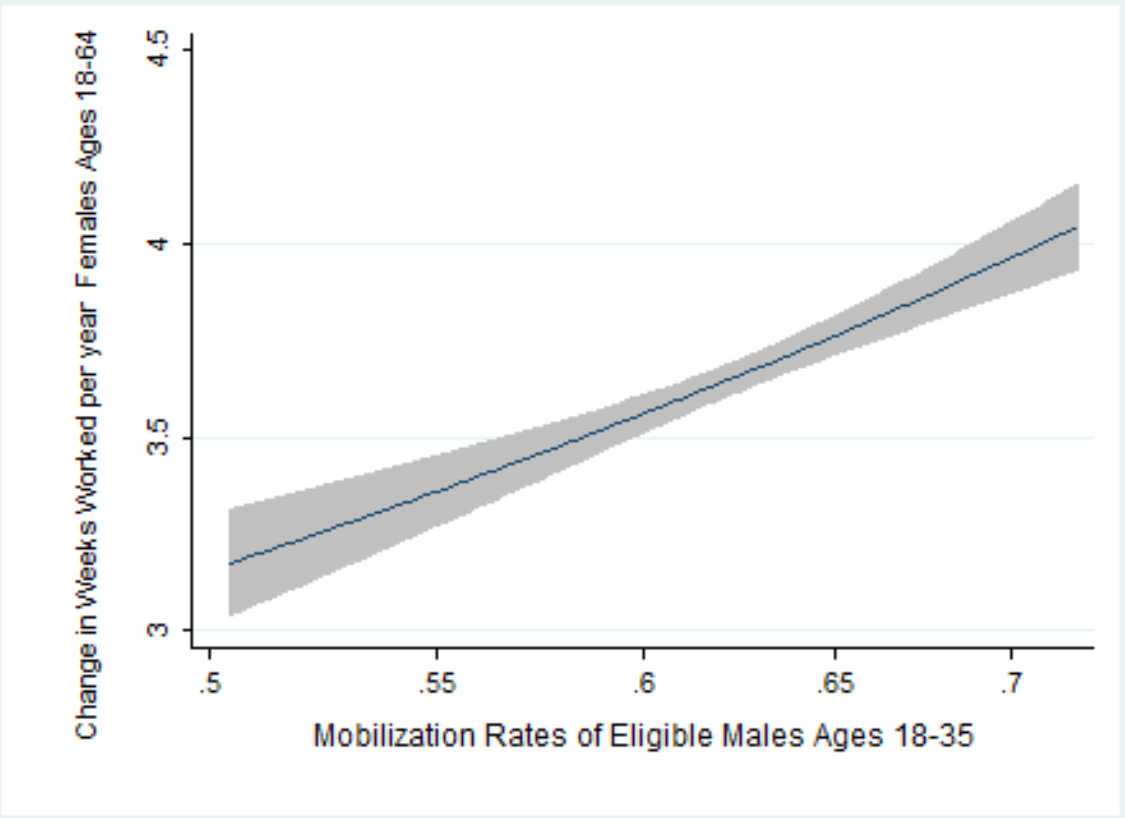


Fig.1.- State WWII mobilization rates and change in female weeks worked per year, U.S., 1940-50.

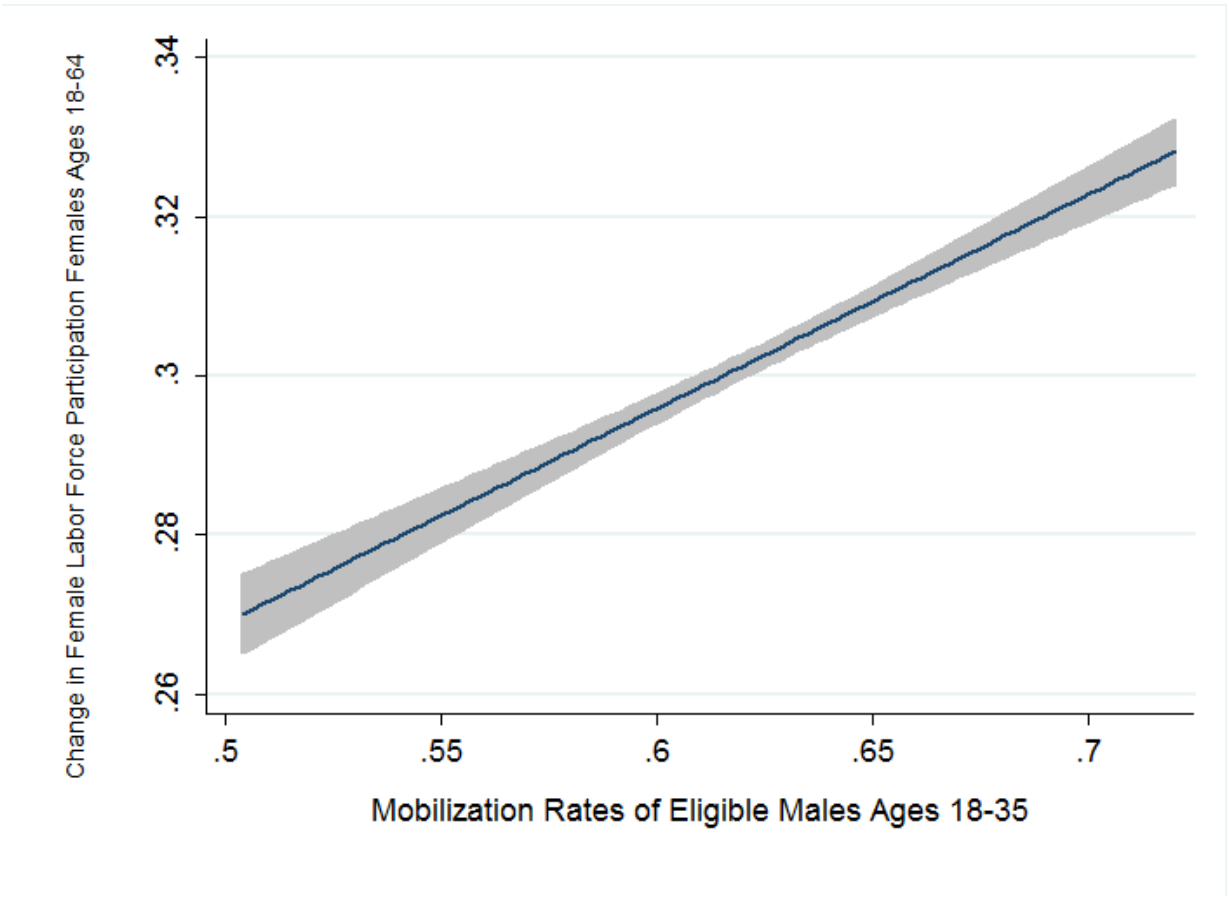


Fig.2.- State WWII mobilization rates and change in female labor force participation per year, 1940-1950.

It is important to make a notion that some previous OLS estimates for married females (Table 1, Section IV) show two time dimensions of correlation between mobilization and female labor outcomes: short-term and long-term dimensions. The direct effect is expressed by a significant positive correlation of the variables for white non-farm married females in 1950, who experienced shocking increase of the female labor supply in a context of insecurity and sharp budget tightening, expressed by increase of taxes due to the War. Furthermore, the data for 1960 shows significant correlation only for an older cohort white non-farm married females (34~44 years old). Those findings support the assumptions made by Goldin (2013) that the older cohorts in 1960 were affected most probably by their mothers who worked a decade before or by the

changing environment and female role attitudes that came with the sharp increase of FLFP in the 1940s. The effect was transmitted by the role model channel, which suggests that a working mother brings a positive role example towards her daughters, which changes the daughters' attitudes towards the female role in society in a positive manner. Still, the previous assumptions are supported by recognized academic papers and tested by the data used for the recent work and should not be treated as a causal relation inference.

With the significant change of the role of women on the labor market, the interactions and utilities within the households change as well. In the recent work, differently from other papers, the external variation for female labor outcomes will be utilized in order to investigate its correlation with the education outcomes for the children of the women directly affected during the war period. Within a household, the decisions made by mothers and fathers about their leisure time distribution, child care and work, depends mostly on their preference, attitude towards the children as particular good and the comparative advantages of the parents. No matter what choice the parents make, there is always a cost for childcare, consumption and leisure. Inevitably the choice is bringing a trade-off. In the contexts of wartime, economic post-depression and strict tax rates, the preference for work is assumed to increase.

Based on the logic stated before, the females would have different groups of incentives to increase their labor outcomes during the wartime. Some of those incentives will be related to budget constraints due to absence of the male head of the household, tax increase, decrease of the after tax wage. Moreover, the female labor demand blooming due to the "absence" of males, would most probably give a chance to women who are on the labor market but unemployed till the war period. Those two cases draw differences in the effects of the total income of the

household, which impact on the education outcomes will be signalizing about what group of incentives is playing role at the particular period.

Economic models do not suggest unambiguous analysis of the effects of the mothers' employment on the welfare of children. Inevitably, income is necessary for the household members' consumption, but still there is a trade-off for the non-market-purchased investments in children (Flinn et al 2013). Why the non-market-purchased investments are important? Flinn et al. state that children and their "quality" are some of the most important products of a household. They found that during the "production process" of the children, the time inputs for active childcare the parents make, has significant impact on the cognitive abilities during the early ages of the children. The market-purchased investments appear to have less significant effect on the children's "quality".

As previously agreed with Goldin(2013), the wartime in the U.S. and the labor shock effects on American women have long- and short term effects. Since the long-term effects are characterized with analytical ambiguity, the period after 1950 will not be investigated in detail. The education outcomes are suggested to be affected by the short-run effects of the mobilization rates on the female labor outcomes. The female choice for balancing the trade-off from her labor choice is suggested to be affected by budget constraints and labor market shock, both caused by the WWII. The work is organized as follows: the theoretical framework will be presented in Section II; Section III will shed more light on the identification strategy; the data and preliminary OLS estimates will be shown in Section IV; finally Sections V and VI present the key findings, policy implications and conclusions.

II. Theoretical Framework

The IMF report on Women, Work, and the Economy (2013) states the gender gap significantly matters for the macroeconomic gains and economic development. The analysis narrows to better-off education outcomes for children, especially girls, as an implication of increased female labor force outcomes. The report also suggests that mothers tend to invest more income in the children's education, comparatively to fathers. That theory is supported by the work of Qian (2005) on the "missing women" in China and the impact of their relative income. Qian finds evidence for positive correlation between the relative female income and welfare outcomes for children (survival rates and education attainment). Fan et al (2014) argue those effects of mothers' employment on the education outcomes for children, is transmitted through the production channel and the role model one. In that sense, the increasing female labor force opportunities are perceived as a significant poverty- reducing factor by enhancing economic growth through better-off education outcomes (Heintz, 2006; Stotsky, 2006). That theoretical point is close to the policy implications views about the World Bank development programs, which see the increase of FLFP as a drive for decrease of fertility rates. The high FLFP and lower total fertility rate (TFR) are seen as reasons for more effective and efficient distribution of the constrained household budget among few children. In that sense, the market-purchased investment is seen as a contributing factor to the education outcomes for children. However, as discussed in the introductory section, the investments in children are monetary and non-monetary and both are part from different utility function parameters, which by itself means that there would be no perfect investment in the "best outcome quality" of children.

It is not completely convincing to state that in the 1940s in the U.S., the shocking increase of FLFP led to the increase of the female total after-tax income. Acemoglu et al. (2004) found that

the increase of female weeks worked per year led to wages decrease for both males and females. The reasons behind those findings lie in the severe tax policies of the U.S. government during that time and the adjusting process of the labor market due to the watershed labor market events. The recent analysis is set on theories that explain: the change in labor choice driven mainly by budget constraints; the impact on education outcomes for children mainly through market and non-market investments, but not on the theories explaining the effect of female role-models.

In order to shed more light on the explanations based on the female decisions, in this section there will be framed a utility function model. Since the female labor outcomes are object of interest to the recent work, it will be considered a household model with one-parent decision maker. In this case, the endowment time is one unit. If it is considered two parents model, then that endowment will be two units and the labor activity for mother and father should be taken as perfect substitutes. In the particular context of the paper, it is misleading to treat the parents' labor activity in that way, because the social reality and attitudes in the 1940s does not match the idea of perfect substitutes of the gender roles.

Utility for the mother is defined by her consumption **c**, leisure time for herself and at home **d**, and finally the number of children **n**. Under d will also include the time spent with her children as a non-monetary investment in their development and education production process. Hence, the mother's utility function will be:

$$U(c, d, n) = \log(c) + \alpha\log(d) + \beta\log(n) + \varepsilon \qquad (1)$$

, where the coefficients $\alpha, \beta > 0$ and represent the mother's preference for leisure and childbirth. As noted before, TFR and childbirth decisions are not discussed in the research, but the model

needs to be noted in order to understand better the time distribution and the trade-offs mothers face when making decisions.

The time endowment of one unit will be distributed among time (h) spent working (w), for particular wage compensation (p). The non-monetary time investment in childcare will be denoted by b, per n child. Thus, the time unit will be distributed as follows:

$$d - hw - bn = 1 \qquad (2)$$

Next, the total household income, measured by earnings pw and other transfers B, is allocated among all family members. The children's consumption of monetary goods is showed as r. It hence:

$$c + r\,n = pw + B \qquad (3)$$

Mainly, those microeconomics models are used in academic papers, in order to provide inference through their solutions about the number of children and the decision of parents about their labor activities. The motivation of the current illustration of that decision model is to emphasize on the existence of trade-offs for childcare and work preference of a parent. The model suggests negative correlation between weeks worked per mother and time spent with her children. Since this work does not utilize data for time spent with the children, the model will be used solely to build up the arguments.

III. Identification Strategy

The identification strategy of this paper is based on the assumption that all females in the U.S. were directly or indirectly affected by the WWII mobilization process. The outcome of that influence was the increase of the female weeks worked annually. It is a common sense that the impact should be asymmetric across female age, race, social and marital status, number of children, state of birth, and other factors.

The indirect effect is suggested to occur at least a decade later, in the 1960s, for cohorts of women whose mothers were directly influenced by the labor market shocks in the 1940s. By the role model of the working mothers those early cohorts have changed their preferences and attitudes towards the female role in the society. Their decisions are suggested to change in higher preference for increase of labor activity. This idea is investigated in detail by Goldin (2004; 2013), showing that even decades after the start of the mobilization process, the labor outcomes for females are still observable. The direct impact is assumed to affect the females who are on the labor market seeking for jobs, but still unemployed before the labor shock. This impact is assumed to affect also the married or single mothers who had strong incentives (as mentioned already wartime-caused household budget constraints) to enter the labor market, or to increase the weeks worked after the increase of the female labor force demand. The paper's focus is not on analyzing solely the wartime outcomes and the following transformation of the labor market attitudes in U.S. in the 1940s, but rather to use that variation of increase of the female labor activity and to follow up the education attainment for the children of the working mothers. This is the reason why the main results that will be discussed target the group of white females who are not married with at least one child in the age of 3 to 24 years old.

The general version of the estimation for the correlation between mobilization rates and mothers' weeks worked annually is:

$$y_{its} = \varphi + \gamma y1950 + \alpha Z_{it} + \beta X_{s1940} + \delta mobr_s + \varepsilon_{its0} \qquad (4)$$

, where y_{its} is the outcome variable for weeks worked annually for mother i in year t in state s. For the results that will be presented, only year 1950 will be included in order to capture the short-term direct effect. Z_{it} are covariates for mother i, such as number of children, age, level of education, state of birth. X_{s1940} are state covariates such as fraction of male employment in farm occupations. The choice of the last covariates is based on the example of Acemoglu et al (2004) and Goldin (2013). δ is the coefficient of interest in this model, since it gives the correlations results between mobilization rates in state s and the mothers' weeks worked annually.

As already noted, Acemoglu et al. (2004) and Goldin (2013) already have used the same mobilization rate variable in their work and have proven its reliability and consistency through various robustness checks, which have showed that the mobilization rate variable is not related to pre-WWII outcomes. The data used in this work is the same as the mentioned scholars: 1940, 1950 and 1960 IPUMS of the 1% U.S. population census.

After estimating the correlation of (4), the variation of mothers' weeks worked is brought on second level testing by using 2SLS. The major education outcome variable is education attainment of the children of the mothers. There is available data for school attainment of those children. However, since it is binary variable that appears as an outcome on a second stage of 2SLS, the risk of imprecise estimation is high. Thus, it is not used in the recent analysis.

There are two estimation prognoses that may be suggested. First, we may expect positive impact of the increase of mothers' weeks worked on the education attainment outcome variable for their children. That logic is based on the theory of the bargaining power of mothers. In countries like China and the U.S., where there is gender preference, children are perceived differently as an investment, luxury good, etc. Thus, mothers who have sons would have higher bargaining power and the decision making process within the household will be unbalanced. Then considering the theories and ideas developed by Qian (2005) and other scholars listed above, that the mothers tend to invest in their children's welfare more than the fathers, the impact of the mothers' labor activity should increase the education outcomes for the children. That suggestion is not supported by the data from the 1950s. The estimated effect is negative. The main argument to explain it is based on the economic post-depression period, severe fiscal policies in U.S. during that time, were stronger influential factors which pushed the females to work more.

The argument about the 1940s severe context that the mothers experienced, suggests that their income and bargaining power within the household most probably did not increase, and the negative impact on the education may be more logically explained by the absence of the mothers at home. As developed by the utility function, simply by increasing the time for work, the non-monetary investment that the mother makes decreases. If the household is assumed to have one main production outcome which is children, then we can infere that the "quality" of production and development of the children will deteriorate.

IV. Data and OLS Estimates

A. Mobilization Rates per State, 1940

With the outbreak of WWII, the mobilization process in the U.S. started on September 1940. The Selective Training and Service Act established registration process of men 18 to 44 years old (Acemoglu et al 2004). The selection was highly dependent on the farm status of the males, since the government tried to keep active on the labor market farmers who sustain the food supply, which was crucial during the wartime. This is the reason why the farm status is included in the empirical tests and the analysis for mothers is constrained to non-farm status. Also, the fraction of male farmers[1] per state is included as a control variable in the preliminary OLS estimates.

The measure of the mobilization rates variable is retrieved from the work of Goldin (2013) and represents the fraction of eligible white males (number of white men in the age group mobilized divided by the number of white men in the age group in the particular state), 18 to 37 years old, who were enlisted for the War. The data initially is collected from the U.S. Selective Service System 1946, 1947, 1950.

Since the rates vary by state, as well as the magnitudes of the correlation between the rates and mothers' weeks worked variables, the analysis is set with restriction for states with high rates (>0.65). The aim is to test the correlation in states where the process of mobilization is supposed to have highest impact. The aggregate rate for the selected age group has mean 0.63 and varies from 0.50 to 0.72.

[1] The data for the fraction of male share farmers is first used by Acemoglu et al (2004) and kindly provided for download on the James Autor's page, MIT site: https://economics.mit.edu/faculty/dautor/data/autacemly06 .

B. Mothers' Weeks Worked, Education Outcomes for Their Children and Controls

The data source used for the recent work is the 1 percent Integrated Public Use Microdata Series (IPUMS) of the decennial censuses. The same household data is used for two of the key researches that my analysis is based on: *Women, War, And Wages: The Effect Of Female Labor Supply On The Wage Structure At Midcentury* ,and *Shocking Labor Supply: A Reassessment of the Role of World War II on Women's Labor Supply*. The first paper examines the wage structure modifications after the labor market watershed, since the second one is mainly interested particularly about the WWII effects on the female labor demand and supply. However, the main outcome variable of interest in this work is education attainment, also the main group of interest is white non-farm married females, not all females in general. In the 1940s afro-Americans have still being ostracized (PLS explain it somehow well) and they were facing barriers for entering particular sectors. That would may have caused bias of the estimates because the race of the individuals may affect the opportunities those people are given. Also, during the wartime farmers were less likely to be listed for mobilizing due to the need of food and agricultural production. Thus, their households would feel more secured in terms of budget constraints and security. Females who come from a farmer household would be less affected by labor market blooming since the opportunity cost may be higher for staying at home. Under group "married" there are included females whose husband are whether absent, or present. It is obvious that widowed or divorced females would have strong incentives different than the labor market watershed, to work more.

Still, following some of the analytical strategy of those researchers, I drop from the analysis observations with state of residence: Alaska, Hawaii, Washington, D.C., and Nevada. Until 1950s the first two were not yet states, and Nevada is excluded since it is an outlier with very high mobilization rates (Acemoglu et al, 2004).

The education variable (general variable in the data set) was modified from highest year of school completed (the completion differs from the highest year of school attendance) to fully obtained level of education. The coding that was used is as follows: 0 for N/A or no schooling; 1 for completed elementary school; 2 for completed middle school; 3 for completed high school; 4 for completed undergraduate level; 5 for completed graduate school. The mean value is 1.28, with standard deviation 1.23. In order to obtain the outcome education variable for the children of the particular mothers, it was generated a household level average level of education for the children within the household within the age of 3 to 24. In that way when running tests, it was possible to examine the effect of the mother's work on her own children. Also, in order to investigate the whether the mother's work effect is asymmetric between daughters and sons, there were generated two additional variables with sons' and daughters' education attainment, while keeping the same restriction for the age group.

The measure for female labor outcomes is constructed by data that reports the number of weeks worked for profit during the previous year. The mean value for married white non-farm women in 1940, 1950 and 1950 is 7.12, with standard deviation 16.61. The other labor outcome variable that was presented in the Section I Introduction is labor force participation. The coding is 0 for unemployed and 1 for employed during the last year.

The household total income variable is the logarithm of the total pre-tax nonfarm personal income of the parents within the household, excluding the earnings from self-employed jobs. The variable was utilized as a control variable in the main tests, investigating the education outcomes.

The table below shows preliminary OLS estimates of the impact of WWII mobilization process of males on the female labor outcomes. The micro data used for labor outcomes is from 1950 and 1960, and the data for mobilization is from 1940. The states with mobilization rate values smaller that .65 were considered as low-rate states, when values greater than .65 – high-rate states. The regressions of 1950 aim to catch the direct short-term effect, since the estimates of the tests with 1960 data are assumed to represent the indirect long-term effect. There is no basis to infer that those estimates present a causal relationship. Especially in the case of the 1960's results, it is very hard to say that since the explanatory power (R^2) of the particular regressions is quite low. Thus, the focus of interpretation will be directed to the 1950s columns.

TABLE 1

OLS Estimates of Impact of WWII Mobilization Rates on Female Labor Outcomes, 1950-60
Dependent Variable: Female Annual Weeks Worked

	Regressions							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1950				1960			
	< .65		> .65		< .65		> .65	
Panel A. All Females								
Mobilization rate	10.80*** (.57)	5.02*** (.57)	8.05*** (1.36)	5.65*** (1.19)	24.71*** (1.15)	13.65*** (1.28)	13.36*** (2.44)	13.42*** (2.43)
Male Share Farmers		-1.06*** (.15)		-1.21*** (.26)		-2.27*** (.34)		-3.58*** (.63)
Include marital status, age, state of birth, level of education	no	yes	no	yes	no	yes	no	yes
R^2	.001	.22	.0003	.24	.001	.04	.0003	.04
N	427 740		114 513		438 884		104 193	
Panel B. White Non-farm Females								
Mobilization rate	6.45*** (.73)	2.03*** (.74)	7.10*** (1.55)	4.18*** (1.35)	13.44*** (1.31)	3.74*** (1.44)	9.31*** (2.62)	7.15*** (2.60)
Male Share Farmers		-.75*** (.20)		-1.92*** (.42)		-.37*** (.39)		-5.01*** (.84)
Include marital status, age, state of birth, level of education	no	yes	no	yes	no	yes	no	yes

R^2	.0002	.24	.0002	.25	.0003	.08	.0001	.08
N	338 809		93 894		352 341		90 553	
	Panel C. White Non-farm Married Females							
Mobilization rate	3.48*** (.75)	2.74*** (.80)	8.73*** (1.53)	6.16*** (1.46)	3.67*** (1.47)	5.30*** (1.67)	15.86*** (2.92)	13.59*** (3.02)
Male Share Farmers		0.25 (.21)		-.15 (.48)		2.56*** (.45)		-.14 (.12)
Include marital status, age, state of birth, level of education	no	yes	no	yes	no	yes	no	yes
R^2	.0001	.15	.0005	.14	.00	.01	.0004	.006
N	234 710		61 864		250 861		63 029	

**Note:* Standard errors are showed in parentheses.

As shown in the table, most of the coefficients are statistically significant. The more important ones, however, are the estimates that show robustness after controlling for state and individual covariates. Such estimation is present in Panel C. columns (1) ~ (4). The changes of the estimates before and after controlling are not significant. It is obvious that columns (3) and (4), which represent the results for observations from 1950 in states with higher mobilization rates, show higher magnitude of correlation. The main interest of the analysis is to estimate a robust coefficient, which brings a sign of the particular correlation. In this case the correlation between mobilization rates and female annual weeks worked is positive for year 1950, in states with rates greater than .65, for white non-farm married females. The next section is taking as a baseline of analysis the mothers from the group of white married non-farm females in states with high mobilization rates, 1950.

V. Main Findings and Interpretation

For the main analysis the mobilization rate is used as an instrumental variable in order to "extract" from the labor outcome variable for females the variation related to the labor market watershed in the beginning of the 1940s. The aim behind that analytical strategy is to test the impact of increase of mother's labor outcome on education attainment for her children, while that labor outcome increases due external shock such as WWII but not other factors.

The results of the 2SLS are presented in Table 2.The group of white married non-farm mothers in states with mobilization higher than .65 is the baseline specification.

In column (1), no state or individual covariates are included. Columns (1) ~ (3) test the baseline mentioned above, while gradually including covariates on different levels. The coefficients estimates for the impact on the education attainment of the children are robust to the additional controls added, statistically and economically significant. They show that the more weeks a mother is working, the lower education attainment her child will have. That finding is in a contradiction with the non-unitary household theory, as well as, the assumption that the mother tends to invest more in the education of her children. Nevertheless, the severe fiscal policies in the U.S. in the beginning of the 1940s and the decrease of after-tax income, more weeks worked will bring additional units to the household budget. In that case, it may be inferred that mothers may tend to invest more in children's education, however it is conditional on the budget constraints. On the other hand, the results partially support the ideas behind the utility function presented in Section II Theoretical Framework. It states that the more time a mother spends at work, the less time she has with her children and the pay-off of that decision is related mainly to the non-monetary investment in the "production quality" of the children.

TABLE 2

Instrumental Variable Specification: Impact of Mothers' Annual Weeks Worked on Children's Education Attainment, 1950

Dependent Variable: Education Attainment of Children, Age 3~24 years old

	Baseline Specification			Outcome variable for daughters	Outcome variable for sons
	(1)	(2)	(3)	(4)	(5)
IV:Mother's Weeks Worked	-.07**	-.04**	-.04*	-.69*	-.02
	(.03)	(.01)	(.02)	(.03)	(.01)
	First-Stage Coefficients				
Mobilization rate per state	5.71***	16.72***	16.48***	14.89**	16.52**
	(1.73)	(4.86)	(4.90)	(5.90)	(5.89)
Observations	37 591	12 400	12 400	8068	8414
Includes mother's covariates	no	yes	yes	yes	yes
Includes state covariates	no	no	yes	yes	yes

**Note*: Standard errors are reported in parentheses. The number of observations in column (1) differs from the other baseline columns (2) and (3), since in column (1) total income of the household is not included. Thus, there are mothers for whom data for the total income of the household is missing. The total income variable is in logarithm form. The numbers of observations in columns (5) and (6) differ as well. Since some mothers have only sons or only daughters, they will be excluded from the tests for sons if they have only daughters, and from the tests for daughters if they have only sons. The "mother's covariates" include age, state of birth, number of children and total income of household. The male share farmers per state is the included state level covariate.

In columns (4) and (5) the outcome variables are: education attainment of the daughters of the mothers for column (4); and education attainment of the sons of the mothers for column (5). The expectations about the coefficients were based on the theories presented in the previous sections. The impact of the mother's labor outcome for the daughters was assumed to be positive, and for the son negative. That suggestion is based on the theory for the asymmetric influence of the mother as a role model to the daughter and "producer" for the son. Surprisingly, the impact on the daughters' education attainment is negative and statistically significant, and for the son is negative, statistically insignificant but still economically significant. One interpretation that may be done after seeing those results is that the existing theories developed in some of the first sections hold true (bargaining power of the mother within the household, etc.) , but not automatically and not for a context of complex external environment of insecurity, international threat, strict fiscal policies. What is more, the trade-off of the labor activity decisions of mother should be compensated by additional stimulus and child education support, instead of taking a positive and strong correlation between mother's labor outcomes and education for granted.

VI. Conclusion and Policy Implications

That work develops an integrated perspective about the WWII shocking effect on the female labor demand and supply, and the consequent education outcomes for the children of the working mothers. The estimated results show significant evidence for positive correlation between male mobilization rates which represent the effect of the wartime in the U.S. in the early 1940s, and the weeks worked annually per female, which aims to catch the response of the labor market. The 1 percent Integrated Public Use Micro data Series, U.S. was used in order to

construct the labor and education outcomes, while the mobilization rates per state and some covariates were retrieved from the two key for this work papers.

The preliminary OLS estimates showed that the mobilization rates affect the labor market decisions and outcomes for various groups of females by marital status, age and other factors. The effect is separated on direct short-term effect on females during 1950s and indirect long-term effect during 1960s. This work focuses on the short-term effect since explaining and verifying the indirect long-term impact includes more micro- and macroeconomic factors, which requires expansion of the analysis. White non-farm married mothers are the target group of the analysis, since it aims to investigate their children's education outcomes.

By instrumenting the mother's weeks worked with the mobilization rates per state, the variation related to the labor market shock is successfully "extracted " and regressed on the second stage of the 2SLS with the education attainment for the mother's children. The estimates show strong correlation even after controlling for individual and state covariates. Also, the overidentification tests confirm the validity of the instrument (F statistics and Hansen J statistic are not reported in Table 2). Surprisingly, when separate the effect on daughters and sons' education outcomes, the sign for the girls remains negative, and the estimate for the boys looses statistical significance. Those results are quite unexpected, taking into consideration the theories for the role model effects that the mothers transmit to their daughters. Further research may investigate more precisely the reasons for those unexpected results, as well as testing the argument for later cohorts. Also, the utility model presented previously may be developed by introducing additional data for the time a mother actively spent with her children. Such measures can be found in the American Times Use Survey data base.

There should be no doubt that in the long-term the total income of the household is likely to have positive impact on the education outcomes for the children in the family. However, in the conducted tests the correlations remain statistically significant after controlling for the family income. Taking into account the inferences of this research, we may recommend that in order to offset the negative short-term impact of mother's work (considered as decreasing non-monetary investment) on the children, policy makers make sure that in long term the income will increase as well as the monetary investment in education. When governments promote FLFP, in parallel they should provide additional education stimulus for the children of those women, and improvement of childcare (in the cases when the children are below 5 years old).

By no other means one can say that wars have long- and short-term impact on societies but one of the greatest harms is done to the human capital of the particular country. The recent work aims to direct our attention first on the WWII and later on the female labor outcomes as main object of interest, while drawing a warning about the danger of destructive international conflicts, as well as imprecise social policies.

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